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PATENT ABSTRACTS OF JAPAN

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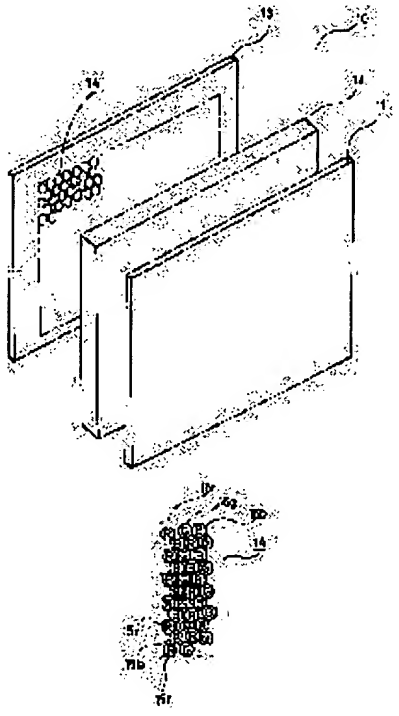
(54) TRANSMISSION TYPE DISPLAY DEVICE

(57)Abstract:

PURPOSE: To obtain uniform light emitting light quantity on the whole display screen by using an LED element as a back light and arranging the LED elements of respective colors in a triangular shape.

CONSTITUTION: A transmission type display element 10 is constituted of an LCD 11, a diffusion plate 12, a PCB 13 and the back light 14. The back light 14 is constituted so that many LED elements 15 are attached to the PCB 13. The LCD 11 is a monochrome liquid crystal display, and is constituted of prescribed pieces of liquid crystal display elements. The LED elements 15 are arranged in the triangular shape by a set of three pieces of a piece each of a red LED element 15r, a green LED element 15g, a blue LED element 15b. Then, by light emitting the LED elements of respective colors in time division, the sufficient light quantity is obtained, and the long life display device is obtained without occurring illuminance shortage.



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CLAIMS

[Claim(s)]
[Claim 1] Penetrated type display characterized by providing the following. Penetrated type liquid crystal display panel. The back light light source with which the red of a large number by which proximity arrangement was carried out, and green and blue light emitting diode were distributed on the average by the rear face of this penetrated type liquid crystal display panel. Display driving means which carry out the display drive of the aforementioned display panel for every sexual desire news. Back light lighting control means which carry out lighting control of the light emitting diode group of the aforementioned red and any 1 green or blue color corresponding to the display period to each sexual desire news of the aforementioned display panel.
[Claim 2] Average distribution of the aforementioned light emitting diode is penetrated type display according to claim 1 characterized by arranging red and green and blue light emitting diode by the same ratio into a unit area.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] this invention relates to the penetrated type display which is applied to the display used for a note type personal computer (henceforth a notebook sized personal computer) etc., especially is used for the back light of a penetrated type liquid crystal panel.
[0002]
[Description of the Prior Art] The liquid crystal display is used not only for small electronic equipment, such as a notebook sized personal computer and a clock, but for 200 inches large-sized display etc. today. The display using outdoor daylight exists in such display, and in order to obtain sufficient luminescence quantity of light, there is also much equipment with which the back light light source is used. As the back light light source used for the above uses, an incandescent lamp, EL (electroluminescence), and Light Emitting Diodes including a fluorescent lamp (light emitting diode) are used conventionally. Especially a fluorescent lamp has the wide width of face of selection of high brightness, efficient, and a light color, and is widely used as the back light light source.
[0003] Drawing 6 shows the cross section of the conventional display which used the fluorescent lamp for the back light light source. As shown in this drawing, red and three green and blue fluorescent lamps 2a, 2b, and 2c are used for the display 1 using the fluorescent lamp, and in order to prevent brightness nonuniformity, while arranging a reflecting mirror 3, a considerable distance is making and arranging fluorescent lamps 2a, 2b, and 2c from the liquid crystal display board (liquid crystal display) 4. Thus, with constituting, luminescence emitted from fluorescent lamps 2a-2c passes along the optical path shown according to a two-dot chain line, is irradiated by the liquid crystal display board 4 through the diffusion board 5, and irradiates light from back at the liquid crystal display board 4.
[0004] On the other hand, drawing 7 is equipment which leads the light emitted from the fluorescent lamp to the light guide plate 6 formed by acrylic resin etc., and is used for the back light of the liquid crystal display board (liquid crystal display) 7. That is, it is the display which arranges red and three green and blue fluorescent lamps 8a, 8b, and 8c in the optical output section 9, leads the light emitted from this fluorescent lamp to the liquid crystal display board 7 with a light guide plate 6, and irradiates the liquid crystal display board 7. in addition -- the inferior surface of tongue of a light guide plate 6 -- reflection -- a member 9 is arranged and the light led to the light guide plate 6 is irradiated efficiently at the liquid crystal display board 7
[0005]
[Problem(s) to be Solved by the Invention] There are the following problems in the above conventional penetrated type display.
(b) In the display first shown in drawing 6 , since a uniform light is irradiated, while equipping the liquid crystal display board 4 with a reflecting mirror 3, depth is needed for equipment, and equipment is enlarged. Moreover, though constituted as mentioned above, the uniform optical irradiation to the liquid crystal display board 4 is difficult. Moreover, when using a cold cathode tube as fluorescent lamps 2a-2c, the shortage of an illuminance poses a problem, and when using a hot cathode tube, that the life of a

pipe is short poses a problem.
[0006] (b) On the other hand, with the display shown in drawing 7 , in order to use a light guide plate 6, optical attenuation poses a problem. Moreover, like an above-mentioned (b), the shortage of an illuminance poses a problem a use case in a cold cathode tube as a fluorescent lamp, and a life poses a problem a use case in a hot cathode tube.
[0007] It aims at offering long lasting penetrated type display, without accomplishing this invention in view of such a problem, being able to miniaturize equipment thinly, while uniform optical irradiation is possible, and producing the shortage of an illuminance.
[0008]
[Means for Solving the Problem] The red of a large number by which proximity arrangement was carried out at the rear face of a penetrated type liquid crystal display panel and this penetrated type liquid crystal display panel according to this invention in the above-mentioned purpose, and the back light light source with which green and blue light emitting diode was distributed on the average, It is attained by the penetrated type display which consists of display driving means which carry out the display drive of the aforementioned display panel for every sexual desire news, and back light lighting control means which carry out lighting control of the light emitting diode group of the aforementioned red and any 1 green or blue color corresponding to the display period to each sexual desire news of the aforementioned display panel.
[0009] Moreover, average distribution of the aforementioned light emitting diode is composition which arranges red and green and blue light emitting diode by the same ratio for example, into a unit area.
[0010]
[Function] this invention arranges a back light in the rear face of a penetrated type liquid crystal display panel through a polarizing plate, this back light is composition which arranges many Light Emitting Diode elements without a crevice, and a uniform light is irradiated on the whole screen of LCD through a polarizing plate by constituting in this appearance.
[0011] Moreover, distribution of a Light Emitting Diode element is composition which distributes the Light Emitting Diode element of each color on the average, for example, carries out the same number arrangement of red and the green and blue light emitting diode into a unit area. Moreover, that what is necessary is just average distribution, distribution of a Light Emitting Diode element arranges the same ratio, for example, red, and green and blue light emitting diode in 1 to 1 to 1, 1 to 1 to 2, 1 to 1 to 3, etc. for the Light Emitting Diode element of each color, and obtains uniform luminescence.
[0012]
[Example] Hereafter, it explains, referring to a drawing about one example of the penetrated type display of this invention.
[0013] Drawing 1 is the assembly drawing showing the whole penetrated type display composition of one example. Moreover, drawing 2 is the side elevation of equipment after assembling penetrated type display. In both drawings, the penetrated type display 10 consists of LCD (Liquid crystal display)11, a diffusion board 12, PCB (print circute board)13, and a back light 14. LCD11 is the liquid crystal display of monochrome, and consists of liquid crystal display elements of a predetermined individual (for example, if it is a notebook-sized personal computer 480x640 pieces). Moreover, LCD11 consists of penetrated type liquid crystal panels, and displays data using a back light 14. The diffusion board 12 diffuses the light of a back light 14, and irradiates a more uniform light to LCD11. Moreover, PCB13 consists of a control circuit which drives Light Emitting Diode formed in a back light 14, and a control circuit which drives LCD.
[0014] (a) of drawing 3 and (b) are drawings which explain the composition of the above-mentioned back light 14 in detail, this drawing (a) shows a part of side of a back light 14, and (b) of this drawing shows a part of transverse plane of a back light 14. A back light 14 attaches many Light Emitting Diode elements 15 in PCB13, and is constituted, and the Light Emitting Diode element 15 consists of Light Emitting Diodes of three colors of red (R), green (G), and blue (B). Moreover, as the arrangement is shown in this drawing (b), each Light Emitting Diode elements 15r, 15g, and 15b of red (R), green (G), and blue (B) become 3 sets [1] at a time by one piece respectively, a triangle is formed, and many Light

h g cg b eb cg e e

Emitting Diode elements of this triangle configuration are arranged without the crevice.
[0015] On the other hand, drawing 4 is the circuit block diagram of the penetrated type display of this example, and is the control circuit arranged by above-mentioned PCB13. The LCD control circuit 17 is a circuit which outputs a status signal to LCD11 based on the video signal (RGB code) outputted from CPU of a notebook sized personal computer etc. Moreover, the Light Emitting Diode control circuit 18 is a circuit which creates the signal which drives a back light 14 like **** based on the video signal (RGB code) outputted from CPU. That is, when making red Light Emitting Diode element 15r emit light according to an RGB code, RL signal is outputted to a back light 14. Moreover, when making 15g of green Light Emitting Diode elements emit light, GL signal is outputted to a back light 14, and BL signal is outputted when making blue Light Emitting Diode element 15b emit light. Moreover, the color adjustment input section 19 is a circuit for adjusting by controlling the luminescence time of red (R), green (G), and the Light Emitting Diode elements 15r, 15g, and 15b that correspond blue (B) color balance.
[0016] In addition, above-mentioned regulation is performed by adjusting the DIP switch arranged by the interior of equipment (on PCB13), or the non-illustrated operation panel. In the penetrated type display of the above composition, if a video signal (RGB code) inputs from CPU, the LCD control circuit 17 will perform analysis processing of a video signal (RGB code), and will memorize the data for every color of red (R), green (G), and blue (B) to a frame memory. And the color data memorized by the frame memory are chosen for every frame, and it outputs to LCD11. The signal which drives the dot as which red should be displayed for example, at the time of a red display is outputted to LCD11 by this processing, and drives a corresponding dot by it. On the other hand, the same video signal (RGB code) as **** is outputted also to the Light Emitting Diode control circuit 18, for example, RL signal is outputted from the Light Emitting Diode control circuit 18 at the time of (Red R) display, and light is emitted in all red Light Emitting Diode element 15r in a back light 14.
[0017] The timing diagram shown in drawing 5 is drawing showing the timing as which the color data of each color are displayed on LCD11, and the timing to which the Light Emitting Diode elements 15r, 15g, and 15b of each color emit light. For example, in an above-mentioned red display, synchronizing with the output timing (standup of Rd) of the image display to LCD11, light is emitted in red Light Emitting Diode element 15r (ton). Similarly, in a green display, synchronizing with the standup of the display timing (Gd) to LCD11, light is emitted in 15g of green Light Emitting Diode elements (ton), and, in a blue display, is emitted in blue Light Emitting Diode element 15b synchronizing with the standup of display timing (Bd) (ton). Thus, it is expressed as the color to which the image data displayed on LCD11 through the diffusion board 12 corresponds by emitting light in the color which corresponds from a back light 14 at the same time it outputs the image data for every color to LCD11. Therefore, a color picture display can be performed using LCD11 of monochrome.
[0018] Moreover, a display is performed in the color balance to which the lighting time of each color was adjusted based on the set point of the lighting time (ton) set up in the color adjustment input section 19 of the above-mentioned [this color picture]. Therefore, color display of the color tone for which a user wishes can be performed.
[0019] Moreover, since the light is switched on one by one, without driving simultaneously the Light Emitting Diode elements 15r, 15g, and 15b of each color as shown in drawing 5 , luminescence time of red and the Light Emitting Diode element of each green and blue color can be shortened, and power can be saved. Therefore, if the same power is supplied conversely, the display of one 3 times the luminescence quantity of light of this is realizable.
[0020] In addition, in drawing 5 , since the luminescence quantity of light of blue Light Emitting Diode is generally lower than the luminescence quantity of light of Light Emitting Diode of other colors compared with the luminescence time whose luminescence time (lighting time) of blue Light Emitting Diode element 15b is other Light Emitting Diode elements 15r and 15g, in order that a long reason may compensate this, it lengthens luminescence time (lighting time) of blue Light Emitting Diode element 15b, and compensates the shortage of the quantity of light. Therefore, blue Light Emitting Diode of the luminescence quantity of light (brightness is abbreviation 1.0 cd/m2) which is equal to Red Light

h g cg b eb cg e e

Emitting Diode (for example, brightness 1.8 cd/m2) and green Light Emitting Diode (for example, brightness 0.8 cd/m2) is developed, and if such a Light Emitting Diode is used, the luminescence time of blue Light Emitting Diode element 15b can be set as the same time as the luminescence time of other Light Emitting Diode elements recently.

[0021] In addition, at this example, although arrangement of red (R), green (G), and the Light Emitting Diode element of three blue (B) colors was made into the shape of a triangle, it does not necessarily restrict to this configuration, and as long as it is the composition which arranges red and green and blue light emitting diode by the same ratio into a unit area, you may arrange in other configurations.

[0022] Arrangement of the aforementioned light emitting diode that what is necessary is just to be on the average Moreover, for example, the red in a unit area (R), Two blue Light Emitting Diode elements not only when also using the one use number of the Light Emitting Diode element of green (G) and three blue (B) colors at a time (1 to 1 to 1), but with little luminescence quantity of light are used, and it is good at a time for one piece also as 1 set of four-piece arrangement composition (1 to 1 to 2), using respectively a red Light Emitting Diode element and a green Light Emitting Diode element. Moreover, the arrangement configuration can also be set as various configurations, such as a square and a rhombus. Moreover, if light emitting diode is the same ratio, of course, you may constitute from other ratios of 1 to 1 to 3 grade.

[0023]

[Effect of the Invention] Since this invention uses a Light Emitting Diode element for a back light, it can be miniaturized thinly, and moreover, the uniform luminescence quantity of light can be obtained to the whole display screen in arranging arrangement of the Light Emitting Diode element of each color in the shape of a triangle etc.

[0024] Moreover, since light is emitted in the Light Emitting Diode element of each color in time sharing, sufficient quantity of light can be obtained, and long lasting display can be obtained, without producing the shortage of an illuminance.

[Translation done.]

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TECHNICAL FIELD

[Industrial Application] this invention relates to the penetrated type display which is applied to the display used for a note type personal computer (henceforth a notebook sized personal computer) etc., especially is used for the back light of a penetrated type liquid crystal panel.

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PRIOR ART

[Description of the Prior Art] The liquid crystal display is used not only for small electronic equipment, such as a notebook sized personal computer and a clock, but for 200 inches large-sized display etc. today. The display using outdoor daylight exists in such display, and in order to obtain sufficient luminescence quantity of light, there is also much equipment with which the back light light source is used. As the back light light source used for the above uses, an incandescent lamp, EL (electroluminescence), and Light Emitting Diodes including a fluorescent lamp (light emitting diode) are used conventionally. Especially a fluorescent lamp has the wide width of face of selection of high brightness, efficient, and a light color, and is widely used as the back light light source.
[0003] Drawing 6 shows the cross section of the conventional display which used the fluorescent lamp for the back light light source. As shown in this drawing, red and three green and blue fluorescent lamps 2a, 2b, and 2c are used for the display 1 using the fluorescent lamp, and in order to prevent brightness nonuniformity, while arranging a reflecting mirror 3, a considerable distance is making and arranging fluorescent lamps 2a, 2b, and 2c from the liquid crystal display board (liquid crystal display) 4. Thus, with constituting, luminescence emitted from fluorescent lamps 2a-2c passes along the optical path shown according to a two-dot chain line, is irradiated by the liquid crystal display board 4 through the diffusion board 5, and irradiates light from back at the liquid crystal display board 4.
[0004] On the other hand, drawing 7 is equipment which leads the light emitted from the fluorescent lamp to the light guide plate 6 formed by acrylic resin etc., and is used for the back light of the liquid crystal display board (liquid crystal display) 7. That is, it is the display which arranges red and three green and blue fluorescent lamps 8a, 8b, and 8c in the optical output section 9, leads the light emitted from this fluorescent lamp to the liquid crystal display board 7 with a light guide plate 6, and irradiates the liquid crystal display board 7. in addition -- the inferior surface of tongue of a light guide plate 6 -- reflection -- a member 9 is arranged and the light led to the light guide plate 6 is irradiated efficiently at the liquid crystal display board 7

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EFFECT OF THE INVENTION

[Effect of the Invention] Since this invention uses a Light Emitting Diode element for a back light, it can be miniaturized thinly, and moreover, the uniform luminescence quantity of light can be obtained to the whole display screen in arranging arrangement of the Light Emitting Diode element of each color in the shape of a triangle etc.
[0024] Moreover, since light is emitted in the Light Emitting Diode element of each color in time sharing, sufficient quantity of light can be obtained, and long lasting display can be obtained, without producing the shortage of an illuminance.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] There are the following problems in the above conventional penetrated type display.
(b) In the display first shown in drawing 6 , since a uniform light is irradiated, while equipping the liquid crystal display board 4 with a reflecting mirror 3, depth is needed for equipment, and equipment is enlarged. Moreover, though constituted as mentioned above, the uniform optical irradiation to the liquid crystal display board 4 is difficult. Moreover, when using a cold cathode tube as fluorescent lamps 2a-2c, the shortage of an illuminance poses a problem, and when using a hot cathode tube, that the life of a pipe is short poses a problem.
[0006] (b) On the other hand, with the display shown in drawing 7 , in order to use a light guide plate 6, optical attenuation poses a problem. Moreover, like an above-mentioned (b), the shortage of an illuminance poses a problem a use case in a cold cathode tube as a fluorescent lamp, and a life poses a problem a use case in a hot cathode tube.
[0007] It aims at offering long lasting penetrated type display, without accomplishing this invention in view of such a problem, being able to miniaturize equipment thinly, while uniform optical irradiation is possible, and producing the shortage of an illuminance.

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MEANS

[Means for Solving the Problem] The red of a large number by which proximity arrangement was carried out at the rear face of a penetrated type liquid crystal display panel and this penetrated type liquid crystal display panel according to this invention in the above-mentioned purpose, and the back light light source with which green and blue light emitting diode was distributed on the average, It is attained by the penetrated type display which consists of display driving means which carry out the display drive of the aforementioned display panel for every sexual desire news, and back light lighting control means which carry out lighting control of the light emitting diode group of the aforementioned red and any 1 green or blue color corresponding to the display period to each sexual desire news of the aforementioned display panel.
[0009] Moreover, average distribution of the aforementioned light emitting diode is composition which arranges red and green and blue light emitting diode by the same ratio for example, into a unit area.

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OPERATION

[Function] this invention arranges a back light in the rear face of a penetrated type liquid crystal display panel through a polarizing plate, this back light is composition which arranges many Light Emitting Diode elements without a crevice, and a uniform light is irradiated on the whole screen of LCD through a polarizing plate by constituting in this appearance.
[0011] Moreover, distribution of a Light Emitting Diode element is composition which distributes the Light Emitting Diode element of each color on the average, for example, carries out the same number arrangement of red and the green and blue light emitting diode into a unit area. Moreover, that what is necessary is just average distribution, distribution of a Light Emitting Diode element arranges the same ratio, for example, red, and green and blue light emitting diode in 1 to 1 to 1, 1 to 1 to 2, 1 to 1 to 3, etc. for the Light Emitting Diode element of each color, and obtains uniform luminescence.
[0012]

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EXAMPLE

[Example] Hereafter, it explains, referring to a drawing about one example of the penetrated type display of this invention.
[0013] Drawing 1 is the assembly drawing showing the whole penetrated type display composition of one example. Moreover, drawing 2 is the side elevation of equipment after assembling penetrated type display. In both drawings, the penetrated type display 10 consists of LCD (Liquid crystal display)11, a diffusion board 12, PCB (print circute board)13, and a back light 14. LCD11 is the liquid crystal display of monochrome, and consists of liquid crystal display elements of a predetermined individual (for example, if it is a notebook sized personal computer 480x640 pieces). Moreover, LCD11 consists of penetrated type liquid crystal panels, and displays data using a back light 14. The diffusion board 12 diffuses the light of a back light 14, and irradiates a more uniform light to LCD11. Moreover, PCB13 consists of a control circuit which drives Light Emitting Diode formed in a back light 14, and a control circuit which drives LCD.
[0014] (a) of drawing 3 and (b) are drawings which explain the composition of the above-mentioned back light 14 in detail, this drawing (a) shows a part of side of a back light 14, and (b) of this drawing shows a part of transverse plane of a back light 14. A back light 14 attaches many Light Emitting Diode elements 15 in PCB13, and is constituted, and the Light Emitting Diode element 15 consists of Light Emitting Diodes of three colors of red (R), green (G), and blue (B). Moreover, as the arrangement is shown in this drawing (b), each Light Emitting Diode elements 15r, 15g, and 15b of red (R), green (G), and blue (B) become 3 sets [1] at a time by one piece respectively, a triangle is formed, and many Light Emitting Diode elements of this triangle configuration are arranged without the crevice.
[0015] On the other hand, drawing 4 is the circuit block diagram of the penetrated type display of this example, and is the control circuit arranged by above-mentioned PCB13. The LCD control circuit 17 is a circuit which outputs a status signal to LCD11 based on the video signal (RGB code) outputted from CPU of a notebook sized personal computer etc. Moreover, the Light Emitting Diode control circuit 18 is a circuit which creates the signal which drives a back light 14 like **** based on the video signal (RGB code) outputted from CPU. That is, when making red Light Emitting Diode element 15r emit light according to an RGB code, RL signal is outputted to a back light 14. Moreover, when making 15g of green Light Emitting Diode elements emit light, GL signal is outputted to a back light 14, and BL signal is outputted when making blue Light Emitting Diode element 15b emit light. Moreover, the color adjustment input section 19 is a circuit for adjusting by controlling the luminescence time of red (R), green (G), and the Light Emitting Diode elements 15r, 15g, and 15b that correspond blue (B) color balance.
[0016] In addition, above-mentioned regulation is performed by adjusting the DIP switch arranged by the interior of equipment (on PCB13), or the non-illustrated operation panel. In the penetrated type display of the above composition, if a video signal (RGB code) inputs from CPU, the LCD control circuit 17 will perform analysis processing of a video signal (RGB code), and will memorize the data for every color of red (R), green (G), and blue (B) to a frame memory. And the color data memorized by the frame memory are chosen for every frame, and it outputs to LCD11. The signal which drives the dot as

which red should be displayed for example, at the time of a red display is outputted to LCD11 by this processing, and drives a corresponding dot by it. On the other hand, the same video signal (RGB code) as **** is outputted also to the Light Emitting Diode control circuit 18, for example, RL signal is outputted from the Light Emitting Diode control circuit 18 at the time of (Red R) display, and light is emitted in all red Light Emitting Diode element 15r in a back light 14.

[0017] The timing diagram shown in drawing 5 is drawing showing the timing as which the color data of each color are displayed on LCD11, and the timing to which the Light Emitting Diode elements 15r, 15g, and 15b of each color emit light. For example, in an above-mentioned red display, synchronizing with the output timing (standup of Rd) of the image display to LCD11, light is emitted in red Light Emitting Diode element 15r (ton). Similarly, in a green display, synchronizing with the standup of the display timing (Gd) to LCD11, light is emitted in 15g of green Light Emitting Diode elements (ton), and, in a blue display, is emitted in blue Light Emitting Diode element 15b synchronizing with the standup of display timing (Bd) (ton). Thus, it is expressed as the color to which the image data displayed on LCD11 through the diffusion board 12 corresponds by emitting light in the color which corresponds from a back light 14 at the same time it outputs the image data for every color to LCD11. Therefore, a color picture display can be performed using LCD11 of monochrome.

[0018] Moreover, a display is performed in the color balance to which the lighting time of each color was adjusted based on the set point of the lighting time (ton) set up in the color adjustment input section 19 of the above-mentioned [this color picture]. Therefore, color display of the color tone for which a user wishes can be performed.

[0019] Moreover, since the light is switched on one by one, without driving simultaneously the Light Emitting Diode elements 15r, 15g, and 15b of each color as shown in drawing 5 , luminescence time of red and the Light Emitting Diode element of each green and blue color can be shortened, and power can be saved. Therefore, if the same power is supplied conversely, the display of one 3 times the luminescence quantity of light of this is realizable.

[0020] In addition, in drawing 5 , compared with the luminescence time whose luminescence time (lighting time) of blue Light Emitting Diode element 15b is other Light Emitting Diode elements 15r and 15g, from the luminescence quantity of light of Light Emitting Diode of the color of others [quantity of light / luminescence / of blue Light Emitting Diode], in order that a long reason may be a low and may compensate this, it lengthens luminescence time (lighting time) of blue Light Emitting Diode element 15b, and generally it compensates the shortage of the quantity of light. Therefore, blue Light Emitting Diode of the luminescence quantity of light (brightness is abbreviation 1.0 cd/m2) which is equal to Red Light Emitting Diode (for example, brightness 1.8 cd/m2) and green Light Emitting Diode (for example, brightness 0.8 cd/m2) is developed, and if such a Light Emitting Diode is used, the luminescence time of blue Light Emitting Diode element 15b can be set as the same time as the luminescence time of other Light Emitting Diode elements recently.

[0021] In addition, at this example, although arrangement of red (R), green (G), and the Light Emitting Diode element of three blue (B) colors was made into the shape of a triangle, it does not necessarily restrict to this configuration, and as long as it is the composition which arranges red and green and blue light emitting diode by the same ratio into a unit area, you may arrange in other configurations.

[0022] Arrangement of the aforementioned light emitting diode that what is necessary is just to be on the average Moreover, for example, the red in a unit area (R), Two blue Light Emitting Diode elements not only when also using the one use number of the Light Emitting Diode element of green (G) and three blue (B) colors at a time (1 to 1 to 1), but with little luminescence quantity of light are used, and it is good at a time for one piece also as 1 set of four-piece arrangement composition (1 to 1 to 2), using respectively a red Light Emitting Diode element and a green Light Emitting Diode element. Moreover, the arrangement configuration can also be set as various configurations, such as a square and a rhombus. Moreover, if light emitting diode is the same ratio, of course, you may constitute from other ratios of 1 to 1 to 3 grade.

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h g cg b eb cg e e

[Translation done.]

h g cg b eb cg e e

* NOTICES *

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2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the assembly drawing showing the whole penetrated type display composition of one example.
[Drawing 2] It is the side elevation of the penetrated type display of one example.
[Drawing 3] It is the arrangement block diagram of a back light.
[Drawing 4] It is the circuit block diagram of the penetrated type display of one example.
[Drawing 5] It is a timing diagram explaining operation of the penetrated type display of one example.
[Drawing 6] It is the block diagram of the penetrated type display of the conventional example.
[Drawing 7] It is the block diagram of the penetrated type display of the conventional example.
[Description of Notations]
10 Penetrated Type Display
11 LCD
12 Polarizing Plate
13 PCB
14 Back Light
15 Light Emitting Diode Element
15r Red Light Emitting Diode element
15g Green Light Emitting Diode element
15b Blue Light Emitting Diode element
17 LCD Control Circuit
18 Light Emitting Diode Control Circuit
19 Color Adjustment Input Section

[Translation done.]

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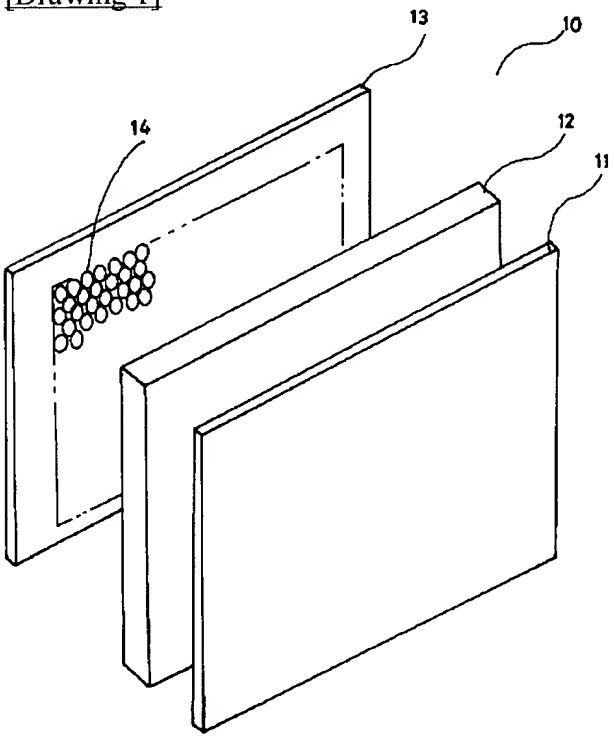
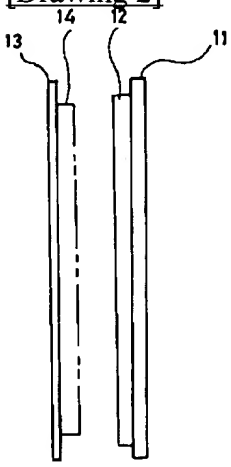
DRAWINGS

[Drawing 1]

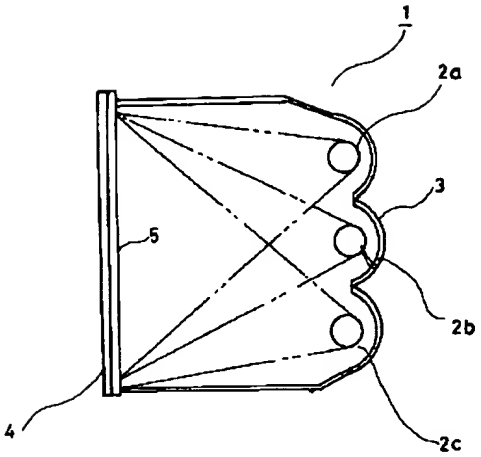


[Drawing 2]

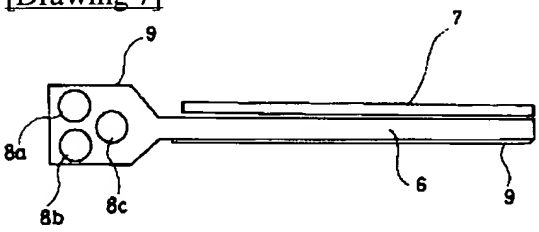


[Drawing 6]

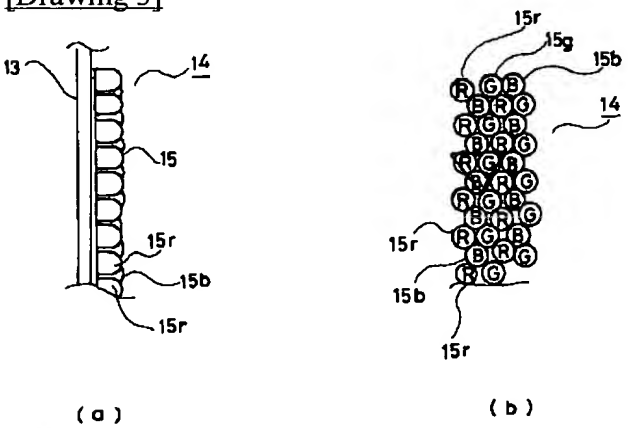
h g cg b eb cg e e



[Drawing 7]

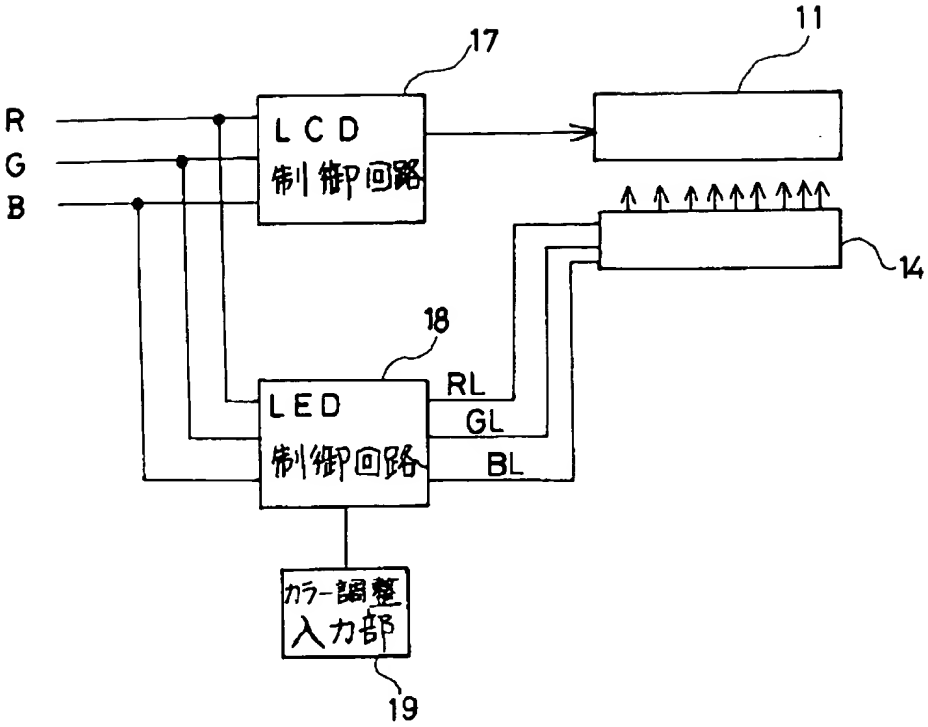


[Drawing 3]

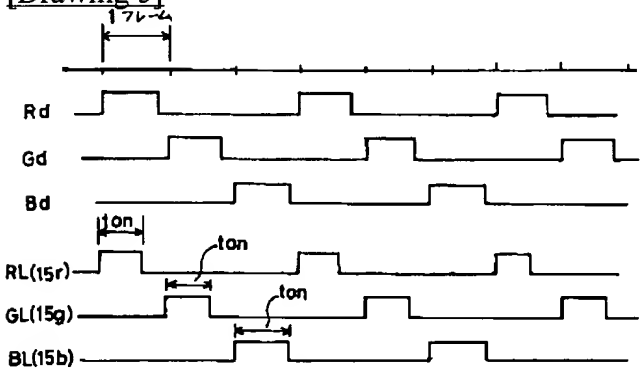


[Drawing 4]

h g cg b eb cg e e



[Drawing 5]



[Translation done.]

h g cg b eb cg e e